

Remarks

In view of the above amendments and the following remarks, reconsideration of the objection and rejections and further examination are requested.

The title of the invention has been amended so as to more clearly describe the invention to which the claims are directed.

The specification and abstract have been reviewed and revised to make a number of editorial revisions thereto. A substitute specification and abstract including the revisions have been prepared and are submitted herewith. No new matter has been added. Also submitted herewith is a marked-up copy of the specification and abstract indicating the changes incorporated therein.

The drawings have been objected to as not illustrating an electromagnetic clutch. Enclosed herewith are replacement Figures 1 and 4 and new Figure 6 illustrating the electromagnetic clutch (labeled (EMC)). Since the electromagnetic clutch is described in the specification, it is submitted that no new matter has been added by the amendments to Figures 1 and 4 and new Figure 6. As a result, withdrawal of the objection to the drawings is respectfully requested.

Claim 1 and 3 have been rejected under 35 U.S.C. §112, second paragraph, as being indefinite for a number of reasons. Claims 1 and 3 have been amended so as to address this rejection. As a result, withdrawal of the rejection under 35 U.S.C. §112, second paragraph, is respectfully requested.

Claim 3 has been rejected under 35 U.S.C. §112, first paragraph, as failing to comply with the written description requirement. This rejection is respectfully traversed for the following reasons.

Support for claim 3 can be found in the last sentence of the original abstract and the original specification at page 4, lines 11-15. From this disclosure, it is apparent that when, for example, a vessel strikes a rock, or other submerged object, while speeding and the propeller and/or shaft are damaged and cannot be used, the vessel is considered a "dead ship on water" and the skipper of a tug boat called to assist will ask the captain of the vessel to sign a "Lloyd's Form of Salvage contact." If, however, the ship is equipped with the present invention, the crew will be able to energize the emergency propulsion system and the captain of the vessel will be able to demonstrate to the skipper of the tug boat that the vessel is not a "dead ship on water."

Therefore, the captain will be able to claim and sign a "Towage contract" instead of the above-mentioned salvage contract.

The benefits of the towage contract versus the salvage contract are related to the fee that is paid to the skipper of the tug boat. The fee for the towage contract is calculated relative to the size of the vessel and the distance or time it will take to tow the vessel to a safe anchorage. On the other hand, the fee for the salvage contract includes the above-discussed fee for the towage contract, plus an additional fee that is calculated relative to the value of the vessel, which could be hundreds of thousands or millions of dollars. Therefore, the benefits of avoiding the salvage contract are clear. As a result, withdrawal of the rejection is respectfully requested.

Claim 1 has been rejected under 35 U.S.C. §103(a) as being patentable over De Risi (U.S. 6,158,371) in view of Rice (US 3,941,076). This rejection is respectfully traversed for the following reasons.

Claim 1 is patentable over the combination of De Risi and Rice, since claim 1 recites a device including, in part, a fire fighting manifold, to also be used, in emergencies, to divert a full power of a high velocity water jet pump, using a U section pipe, to at least one transom jet nozzle to propel a boat. The combination of De Risi and Rice fails to disclose or suggested these features as recited in claim 1.

De Risi discloses a boat N having a hydraulic system including front nozzles 1 and 2, back nozzles 3 and 4, a pump 5 powered by the engine of the boat N via a hydraulic or electric transmission, and a number of electrovalves 6 each located between the pump 5 and a respective one of the nozzles 1-4. During operation, the hydraulic or electric transmission is engaged and the pump 5 collects water from outside of the boat N by way of an intake 7. The electrovalves 6 are then selectively opened such that the water from the pump 5 is discharged through the desired nozzles 1-4 to maneuver the boat N. Further, the hydraulic system can include an additional nozzle at the rear of the boat N that can be used as a means for emergency propulsion. (See column 2, lines 1-60 and Figures 1 and 4).

As discussed above, De Risi does disclose a hydraulic system whereby the boat N can be maneuvered with the selective use of nozzles 1-4. However, as admitted in the rejection, De Risi fails to disclose or suggest that the hydraulic system is capable of being used to fight a fire or pump water from the bilge of the boat N. As a result, Rice is relied upon in the combination as disclosing these features.

Regarding Rice, it discloses a boat 10 having an engine 20, a pump 16 powered by the engine 20, and a shell 14 fixed to the bottom of the boat 10 having forward passages 26, 28 and 30, rear passages 32, 34 and 36, and lateral passages 38 and 40 connected to the pump 16. The pump has a casing 18 that includes a number of rotary settings for selecting which of the passages 26 – 40 will supply water to the pump 16 and to which of the passages 26-40 the pump 16 will output the water. The selection of the appropriate passages 26-40 allows the boat 10 to be maneuvered. The pump 16 also includes a setting whereby water can be pumped from the bilge of the boat 10 via bilge water intake and outlet passages 46 and 48 and a setting for supplying water to a fire discharge passage 52 to fight fires. (See column 2, line 11- column 3, line 65 and Figures 1, 3, 8 and 11).

In the rejection, that the pump 16 has a setting for pumping water from the bilge and a setting for supplying water to fight fires is relied upon as disclosing the above-discussed features that are lacking from the hydraulic system of De Risi. However, claim 1 specifically recites that the U section pipe is for diverting the full power of the high velocity water jet pump from the fire fighting manifold to at least one transom jet nozzle to provide propulsion to the boat. It is submitted that it would not have been obvious to one of ordinary skill in the art at the time of invention to combine the pump 16 of Rice with the hydraulic system of De Risi to meet this limitation of claim 1 for the following reasons.

De Risi discloses that the hydraulic system can include an addition nozzle at the rear of the boat N for emergency propulsion. In other words, De Risi discloses that the water is routed directly from the pump 5 to the nozzle at the rear of the boat when the proper electrovalve 6 is opened. Further, Rice discloses that the water is routed directly from the pump 16 to a hose for fighting a fire via the fire discharge passage 52 in one setting and is routed directly from the pump 16 to the outside via the bilge water outlet passage 48 for pumping water from the bilge in a second setting. In each of these disclosures of De Risi and Rice, the water passes from a pump through a channel dedicated for the respective operation. On the other hand, the present invention, as recited in claim 1, utilizes the U section pipe to divert water from the fire fighting manifold to the at least one transom jet nozzle to provide propulsion to the boat. Clearly, the use of the U section pipe is not disclosed or suggested by either De Risi or Rice. Further, it is apparent that one of ordinary skill in the art would not combine the disclosures of De Risi and

Rice to utilize a U section pipe as recited in claim 1. As a result, it is submitted that claim 1 is patentable over the combination of De Risi and Rice.

Further, as discussed above with regard to the rejection of claim 3 under 35 U.S.C. §112, first paragraph, the present invention, as also recited in claim 1, allows for the avoidance of the more costly salvage contracts, as compared to towage contracts, by having the U section pipe to divert water from the fire fighting manifold to the at least one transom jet nozzle to provide emergency propulsion to the boat. It is apparent that neither De Risi, nor Rice, discloses or suggests this problem, which is solved by the present invention as recited in claim 1. As stated by the Federal Circuit Court of Appeals in *In re Wright* regarding the mandate of 35 U.S.C. §103, "it is the invention as a whole that must be considered in obvious determinations. The invention as a whole embraces the structure, its properties, and the problem it solves." *In re Wright* 6 USPQ2d 1959, 1961 (Fed. Cir. 1988). Since the rejection under 35 U.S.C. §103(a) relying on De Risi and Rice fails to contemplate the problem solved by the present invention as recited in claim 1, it is apparent that the combination of the references fails to render claim 1 obvious.


Because of the above-mentioned distinctions, it is believed clear that claims 1 and 3 are allowable over the references relied upon in the rejection. Furthermore, it is submitted that the distinctions are such that a person having ordinary skill in the art at the time of invention would not have been motivated to make any combination of the references of record in such a manner as to result in, or otherwise render obvious, the present invention as recited in claims 1 and 3. Therefore, it is submitted that claims 1 and 3 are clearly allowable over the prior art of record.

In view of the above amendments and remarks, it is submitted that the present application is now in condition for allowance. The Examiner is invited to contact the undersigned by telephone if it is felt that there are issues remaining which must be resolved before allowance of the application.

Respectfully submitted,

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Title: ~~OMNI THRUSTER FOR SINGLE OR TWIN INBOARD MOTOR BOATS~~
MOTORBOATS AND MOTORYACHTS



FIELD OF INVENTION

- 5 This invention relates to a device for boats, equipped with one or two inboard engines.

DESCRIPTION OF RELATED ART

- 10 All types of motor boats have some kind of difficulty when trying to turn around in close quarters and other congested areas, due to the fact that, unlike motor cars that travel on solid ground, boats move and travel on fluid water, where side movement, because of wind and/or current, is not an unusual interference in the operator's intent.

Any additional assistance therefore, to make these maneuvers easier and faster, would always be welcome.

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BRIEF SUMMARY OF THE INVENTION

The device that we will describe hereunder, will definitely eliminate the above mentioned disadvantage by placing additional lateral forces at the boat's bow and stern, to be used at the discretion of the boat's operator.

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This device is a water jet bow and stern thruster, powered by a high velocity water jet pump, driven by the propulsion engine, through a magnetic clutch and operated from the boat's cock-pit by electric switches, as we will see later.

25 DESCRIPTION OF PRIOR ART

There are in the market bow-thrusters, using electrically, or hydraulically, operated propellers, in a boats bow, which are bulky, requiring large areas to install.

BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1, is a general plan of a twin inboard engine boat, showing the High Velocity Water Jet Pump (HVWJP), a water jet pump similar to the ones used in the personal water crafts, for propulsion, but without the gasoline engine driving it, connected to the port engine, through an electromagnetic clutch (EMC), operated from the boat's cock-pit. It also shows the piping connecting the pump to the bow and stern thruster nozzles and solenoid valves that will explain further later.

Figure 2, is an electrical schematic diagram showing the electrical switches A, B and C on the cock-pit, connecting the four solenoid valves (h), (i), (j) and (k), regulating the jet nozzles.

Figure 3, is an enlarged view plan of the main switch A, that gives power to either switch B, operating the diagonal turning jets, (h) and (k), or (i) and (j) or, switch C, operating the lateral moving jets, (h) and (j) or (i) and (k). Pilot lights illuminate each switch when energized to show which one is on and the operation it performs.

Figure 4, is an enlarged plan, showing the intake manifold of the HVWJP and valve (d), that can close the sea water suction C, drawing water from the sea and open suction C2, to pump water from the boat's bilges. It also shows ~~the~~ an outlet manifold (f), having a similar valve (e), that diverts the pressure water to a fire manifold (r) This fire hose manifold (r) can, in an emergency, be connected with a special U piece (q), to a pipe (p), leading to main propulsion nozzles (s), at the stern, to be further explained later.

Figure 5, is an enlarged view plan of switch B, showing the double pole-double throw switch connections to solenoid valves, operating the bow and stern thrusters.

It also shows the pilot light, illuminating the crossed arrows, indicating the kind of performance this switch is intended to do.

Switch C, is identical to the above switch B, with the difference that on the C, the arrows are parallel.

DETAILED DESCRIPTION

As in figure 1, the bow and stern thrusters, working in pairs will, either turn the boat quickly to right (clockwise), or to left (counter-clockwise), using switch B, or move the boat sideways, right (starboard direction) or left (port direction), using switch C.

Figure 3 shows switch A having lighted signals, crossed arrows, when put on one position, indicating the turning movement or, parallel arrows, when put on the second position, indicating the lateral movement.

Switches B and C give also power, through relays, to the magnetic clutch of the HVWJP, to come into operation.

Each water jet outlet consists of several nozzles, specially designed to give maximum thrust.

As in figure 2, pilot lights are also on the switches B and C, indicating which of the two is energized and what operation will perform.

OBJECTS AND ADVANTAGES

The main advantage of the ~~Omni-thruster~~ thruster device of the present invention, over the existing bow thrusters is that the ~~Omni~~ present invention uses, each time, two opposing forces (thrusts), on the two ends of the boat; the action forces on the boat to turn are double and the effect is twice as good and twice as fast.

Furthermore, using the same equipment we have onboard, if we strike a rock and a leak starts that the boat's bilge pumps can not maintain, we can turn the HVWJP intake manifold valve (c) to bilge (c2) and suck the incoming water out from there.

One more advantage, with the equipment onboard is that we can turn, the HVWJP outlet valve (e), to fire manifold (r), connect a fire hose and fight a fire on board, or on any other boat in the vicinity. And finally, if our boat strikes a rock, while speeding, or any other submerged object and the propellers and shafts (i.e., the primary propulsion system) are damaged beyond use, we can install the U section pipe, to connect outlet manifold (r) to pipe (p) and use the HVWJP as auxiliary propulsion and legally avoid being charged with Salvage, instead of Towage, if we need one.

10 | For all above reasons we believe that our ~~Omni Thruster~~ thruster device has advantages that the existing ~~Bow~~ bow thrusters do not.

OMNI THRUSTER FOR SINGLE OR TWIN INBOARD MOTOR BOATS

ABSTRACT:

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5 A device for enhancing the maneuverability of inboard motor boats, including ~~comprising~~
a high velocity water jet pump, is ~~attached to the~~ a main propulsion engine, through an
electromagnetic clutch, and ~~controlled from the~~ cock pit. High velocity water flows from the
pump's outlet, to bow and stern side jet nozzles, through solenoid valves, individually controlled,
by electric switches A, B and C, on the boat's ~~cock-pit~~ cock-pit. Prime benefits are, by using jet
10 thrust forces in pairs, fore and aft, the boat will turn twice as fast and more accurately. ~~Also with~~
~~this combination,~~ Also, the boat can ~~also~~ move sideways when needed, in restricted berths, ~~easy~~
~~and fast~~ easily and quickly. Secondary ~~benefits:~~ benefits are that a fire can be
fought on board, or on any other vessel. ~~We can pump out plenty of~~ Further, bilge water can be
pumped, when the bilge pumps cannot do so. ~~We can also divert~~ Additionally, the pump's entire
15 outlet can be diverted to the transom jet nozzles and ~~use it as~~ used for auxiliary propulsion
power, when circumstances ask for it, whereby the payment of ~~and legally avoid paying~~ salvage
charges can be legally avoided and, instead, ~~of towage~~ charges can be paid, if ~~we need one~~ is
needed.